

**INTEGRATEABLE BAND FILTER USING WAVEGUIDE GRATING ROUTERS****ABSTRACT OF THE DISCLOSURE**

5 The inventors propose herein a novel band filter design for planar  
lightwave circuits. In one embodiment of the present invention, the band filter  
includes two waveguide grating routers connected by sets of substantially equal  
path length waveguides within each set separated on one side, wherein the  
waveguides of each set are formed such that optical signals having overlapping  
frequency ranges are propagated through adjacent waveguides. In addition,  
10 the waveguides of each set are spaced at their connection to the second  
waveguide grating router such that optical signals with predetermined optical  
frequency ranges are routed to selected, respective output ports. Some of the  
advantages of this novel band filter include compactness, sharp passband  
corners, and a lack of chromatic dispersion.

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